

115 ABSTRACT

116 The invention is a self-contained process shutdown device that detects
117 abnormal pressures and initiates shutdown by removing the pneumatic or hydraulic
118 pressure needed for a given process or flow to continue. The process' pressure is
119 detected by means of a switch-gauge (a pressure gauge with high and low alarm
120 electrical contacts) which has a pressure sensing port connected to the monitored
121 pressure. The contacts from the switch-gauge are connected to an electronic logic
122 circuit that sends one or more shutdown pulses to trip a pulse driven solenoid and
123 initiate the shutdown. This device provides indicator lamps to show statuses and
124 alarms as well as switch or pushbuttons to activate the "Reset" and "Test" functions.

125 The electrical power is supplied by a power module that is constituted of battery
126 cells connected in such way that it provides a dual voltage output to feed the electronic
127 logic separate from the pulse driven solenoid driver circuit. Alternatively, the power
128 module may be constituted of a circuit made of a photovoltaic module, voltage
129 regulator circuits and three main capacitors with enough capacitance to keep the
130 electronic logic circuit and the solenoid valve driver circuit operating throughout the
131 night or longer.